



New England Conference of Educational Workers.

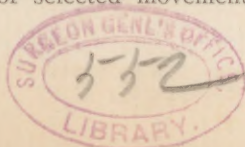
The Photographs, the Statistical Charts and Diagrams, displayed in the hall of the English High School, will be open to public inspection from the close of the morning session of the Conference till 4.30 P.M.

DISPLAY OF PHOTOGRAPHS.—Beginning at the left of the platform, the following exhibits from the Columbian Exposition will be found in the order named:—

(1) Thirty frames, containing photographs illustrating characteristic features of the course of instruction given at the Royal Central Gymnastic Institute of Stockholm, Sweden, which was founded through the instrumentality of P. H. Ling, its first director, in 1813. For Medical Gymnasts its course is of three years' duration; for Directors of School Gymnastics the course is two years; for Assistant Teachers of School Gymnastics its course is one year. Fencing, etc., being omitted from the instruction provided for women, they may complete the partial course in one year, and the full course in two years. This exhibit was presented by Prof. L. M. Törngren, who represented the R. C. G. I. at the Columbian Exposition, to the Boston Normal School of Gymnastics.

(2) Includes a large number of photographs, in twenty-eight frames, exhibited at Chicago by the Boston Normal School of Gymnastics, whose pupils served as models in preparing the photographs. These photographs are intended to illustrate typical free-standing-movements peculiar to the Swedish *Friskgymnastik*. Starting-positions and positions derived therefrom are shown in series, under various heads; e.g., Arm-movements, Trunk-movements, etc. The movements illustrated constitute a portion of the material from which selection is made in composing Tables, or Progressive Days' Orders.

(3) The series of Photographs exhibited at Chicago by the Boston School Committee, to indicate the character of the Swedish gymnastic work done in the Boston Public Schools, is included in framed photographs for wall-display, and duplicates of the same which are contained in two albums. The framed photographs are numbered consecutively, and their significance is shown in a synoptic table contained in a frame by itself. The series illustrates: various starting-positions; selected typical elementary movements; the grouping of selected movements to form the



Day's Order, or Table of Movements; progression shown in various positions derived from a single trunk-movement, taken by classes ranging from the lowest Primary to the Senior High School grade; and a variety of class-movements in free-standing movements and exercises involving the aid of apparatus. This exhibit is loaned for the occasion by the Massachusetts State Board of Education.

DISPLAY OF STATISTICAL CHARTS AND DIAGRAMS.—The first exhibit in this series consists of Anthropometric Charts (together with explanatory text), compiled and loaned by Dr. D. A. Sargent, Director of the Hemenway Gymnasium, Harvard University. It includes: photographs designed to show Dr. Sargent's method of making the anthropometric measurements, which serve as the basis of the percentile grade curves plotted in the above-mentioned series of charts, wherein the physical proportions of males and females, mostly college students, ranging between 10 and 26 years of age, are set forth; and also a series of photographic views of two composite Anthropometric Statues (one male and one female), constructed under Dr. Sargent's direction and in accordance with his collected measurements, to show the proportions and physical conformation of the typical American college student.

(2) In 1875 Dr. H. P. Bowditch, Professor of Physiology in the Harvard Medical School, investigated the height and weight of upwards of 13,000 boys and 10,000 girls belonging to the Boston Public Schools. The first of the series of *unframed charts* exhibit some of the results of Dr. Bowditch's investigation. Dr. Bowditch was the first to show that the growth-rates (as regards height and weight) of boys and girls differ from each other *just before and during the establishment of puberty*; see his first chart. Dr. Bowditch's observations have been confirmed by numerous European and American investigators since 1875. Dr. Bowditch's charts, showing the comparative size of English and American boys and of American boys of different stock, are also of especial interest.

(3) The charts relating to various measurements made on St. Louis school children (some 33,000 in number) have been loaned by their author, Dr. W. T. Porter, Assistant Professor of Physiology in the Harvard Medical School, formerly of St. Louis. Those which relate to weight and height should be compared with similar charts loaned by Dr. Bowditch. Dr. Porter finds that "precocious children are heavier and dull children lighter than the mean child of the same age," and draws the practical conclusion "*that no child whose weight is below the average of its age should be permitted to enter a school grade beyond the average of its age, except after such a physical examination as shall make it probable that the child's strength shall be equal to the strain.*"

(4) Dr. C. J. Enebuske, Principal of Instruction in the Bos-

ton Normal School of Gymnastics, contributes a series of diagrams marked A—I, which embody the results of his investigation into the measurable effects of systematic physical training of women students. Especial interest attaches to this attempt to correlate structural growth with the development of functional power.

His diagrams show the curves of development derived from the measurements of two classes of young women during a course of training in Swedish pedagogical gymnastics. For the year 1891-92 the diagram represents the development between the first measurement in the fall and the last measurement in the spring. For the year 1892-93 the development under each successive month, from the fall of '92 to spring of '93, is indicated.

Diagram A represents the following items:—

(a) Height. (b) Weight. (c) Lung capacity. (d) Strength of leg. (e) Back. (f) Chest. (g) Left forearm. (h) Right forearm. (i) Total strength.

Diagram B represents:—

(a) Weight-height index. (b) Vital index. (c) Strength-weight index. (d) Vital strength-weight index. (e) Power index.

Diagrams C and D represent the relation of the indices of diagram B in selected individuals and classes.

Diagrams E, F, G, H, and I represent the curve of distribution of a class of women in the following items:—

(e) Total strength. (f) Vital index. (g) Strength-weight index. (h) Vital strength-weight index. (i) Power index.

(5) This exhibit embraces six comparative graphical tables, loaned by their compiler, Miss M. Anna Wood, Examiner in the Department of Physical Training, of Wellesley College. These tables set forth the comparative records of three sets of persons, viz.: (1) Of class crews who received training for five months in the gymnasium and on the lake; (2) Of twenty students who received training for five months in the gymnasium in required Swedish gymnastics; (3) Of twenty students who received *no training* in the gymnasium or on the lake. These tables relate to the mean measurements of the three classes of persons named, made at the beginning and end of the five months' period, November, 1892—May, 1893, in respect to: (1) Girth of chest; (2) Capacity of lungs; (3) Strength of Chest; (4) Strength of back; (5) Depth of chest; (6) Breadth of shoulders. The heavy perpendicular lines in each table, marked 1 and 2, 3 and 4, 5 and 6, relate, in each case, to the three classes of persons enumerated above. The lines numbered 1, 3, and 5, represent measurements made in November, 1892, in each case; and the lines numbered 2, 4, and 6, represent measurements, made in May, 1893, in each case.

(6) The series of charts exhibited by Dr. E. M. Hartwell, Director of Physical Training in the Boston Public Schools, embody in statistical form the results of his comparative study of the growth-rates and death-rates of Boston boys and girls, and of his

investigation of the prevalence of stuttering among Boston school children. The curves of growth-rate are compiled from Dr. Bowditch's tables, and represent the percentage increase of boys and girls, in height and weight, from year to year, from 5 to 18. The curves marked Specific Intensity of Life are based on Dr. Hartwell's tables of death-rates of Boston males and females, at each year of age, from birth to 26. The Specific Intensity of Life curves represent the power of the organism to resist death.

Specific Intensity being the reciprocal of the ordinary death-rates, it will be seen, from an inspection of these charts, that the curves of Specific Intensity of Life differ for the two sexes, and are in general parallel to the curves representing the rates of growth characteristic of the two sexes respectively. The most important facts brought out by these curves are: *that the death-rates of Boston boys are lowest during the period of their most rapid growth; the death-rates of Boston girls are lowest during the period of their most rapid growth; and that the lowest death-rate for girls is reached at least a year earlier than is the lowest death-rate of boys.*

Stuttering, which is a nervous disorder characterized by involuntary spasmodic contractions of certain muscles concerned in vocal utterance, is especially liable to occur when the period of most rapid growth is beginning or ending. In other words, stuttering occurs most frequently at second dentition and puberty, when those parts of the nervous system which are concerned in speech-production are most susceptible to disturbance. In certain of the charts the relative prevalence of stuttering among boys and girls in the various school grades and classes is shown. The relatively high percentage of stutterers in the primary classes seems very significant.

(7) The chart exhibited by G. A. Bobrick, C.E., is based upon Dr. Bowditch's tables relating to the height of Boston school children. By ingenious graphical methods Mr. Bobrick shows the range of variation in height of children in the same class and grade, and suggests the necessity of scientifically devised measures to provide growing children with desks and chairs that shall promote, and not hinder, their normal growth and development. Mr. Bobrick's table is very suggestive of the great practical value, in the field of school hygiene, of scientifically conducted anthropometrical measurements of school children.

The chief lesson to be derived from this collection of anthropometrical charts and diagrams seems to be this: that the child's power to resist disease and death is correlated with his power of bodily growth, and that his physical characteristics and powers must be considered in ordering and regulating the conditions inseparable from school life, in order that school life not only shall not induce bodily deformity and weakness, but shall promote normal growth and development.